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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,355	04/23/2007	Robert K. Gieseler	021069.3	7391

24239 7590 10/28/2010

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EXAMINER	
HILL, KEVIN KAI	

ART UNIT	PAPER NUMBER
1633	

MAIL DATE	DELIVERY MODE
10/28/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,355	GIESELER ET AL.	
	Examiner	Art Unit	
	KEVIN K. HILL	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-10,13,15,16,20-24,26-28,37,40,50,52,53,55-59,75-79 and 81* is/are pending in the application.

4a) Of the above claim(s) *7,8,13,20-24,40,55 and 75-79* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,9,10,15,16,26-28,37,50,52,53,56-59 and 81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *May 18, 2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Amendments

Applicant's response and amendments, filed May 18, 2010, to the prior Office Action is acknowledged. Applicant has cancelled Claims 3-5, 11-12, 14, 17-19, 25, 29-36, 38-49, 51, 54, 60-74 and 80, withdrawn Claims 7-8, 13, 20-24, 55 and 75-79, and amended Claims 1, 50, 53, 58 and 81.

Claims 7-8, 13, 20-24, 40, 55 and 75-79 are pending but withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention, there being no allowable generic or linking claim.

This application contains claims drawn to an invention nonelected with traverse in the reply filed on November 13, 2009. Applicant is reminded that the restriction/election requirement was made final in the Office Action of February 18, 2010. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP §821.01.

Claims 1-2, 6, 9-10, 15-16, 26-28, 37, 50, 52-53, 56-59 and 81 are under consideration.

If the claims are amended, added and/or canceled in response to this Office Action, then Applicant is required to follow Amendment Practice under 37 C.F.R. §1.121 AND A CLEAN COPY OF ALL PENDING CLAIMS IS REQUESTED.

Information Disclosure Statement

Applicant has filed an Information Disclosure Statement on May 18, 2010 that has been considered.

The signed and initialed PTO Form 1449 is mailed with this action.

Examiner's Note

Unless otherwise indicated, previous objections/rejections that have been rendered moot in view of the amendment will not be reiterated. The arguments in the May 18, 2010 response will be addressed to the extent that they apply to current rejection(s).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Oath/Declaration

1. **The Examiner acknowledges and accepts** the substitute Oath and Declaration filed on May 18, 2010.

Specification

2. **The prior objection to the disclosure is withdrawn in light of Applicant's amendment to remove the** embedded hyperlink and/or other form of browser-executable code.

Claim Objections

3. **The prior objection to Claims 50 and 53 is withdrawn** in light of Applicant's amendment to the claims.

4. **The prior objection to Claim 81 is withdrawn** in light of Applicant's amendment to the claim.

Claim Rejections - 35 USC § 112

5. **The prior rejection of Claim 58 under 35 U.S.C. 112, second paragraph, is withdrawn** in light of Applicant's amendment to the claim.

Claim Rejections - 35 USC § 102

6. **The prior rejection of Claims 1-2, 6, 9, 15-16, 26-28 and 37-39 under 35 U.S.C. 102(e)** as being anticipated by Hartmann et al (U.S. Patent 6,949,520) **is withdrawn** in light of Applicant's amendment to Claim 1 reciting the specific targeting ligands, limitations that Hartmann et al do not teach.

7. **The prior rejection of Claims 1-2, 6, 9, 15, 26, 28 and 81 under 35 U.S.C. 102(b)** as being anticipated by Smyth-Templeton et al (WO 98/07408; *of record in IDS) **is withdrawn** in light of Applicant's amendment to Claim 1 reciting the specific reservoir cells or targeting ligands, limitations that Hartmann et al do not teach.

8. **The prior rejection of Claims 1-2, 6, 9, 15-16, 26, 28, 38-39, 41-42 and 81 under 35 U.S.C. 102(a)** as being anticipated by Arigita et al (Infection and Immunity 71(9): 5210-5218, 2003) **is withdrawn** in light of Applicant's amendment to Claims 1 and 81 reciting the specific targeting ligands, limitations that Hartmann et al do not teach.

Claim Rejections - 35 USC § 103

9. **Claims 1-2, 6, 9, 15-16, 26-28, 37 and 81 stand rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003) and Figdor et al.

Response to Arguments

Applicant argues that Hartmann does not disclose the targeting ligands of the amended claims.

Applicant's argument(s) has been fully considered, but is not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, Figdor teaches fucose.

Applicant argues that the interferon-producing cells of Harmann are plasmacytoid dendritic cells, which are not myeloid dendritic cells.

Applicant's argument(s) has been fully considered, but is not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, Arigita et al teach a myeloid dendritic cell. Furthermore, Claim 81 is broadly drawn to any reservoir cell.

Applicant argues that the approach of Hartmann is different from the approach of the presently claimed invention because Hartmann intends to elicit an HIV-specific immune response by inducing the release of interferon, while the present claims require the inactivation or eradication of the infectious agent by the active compound of the lipid complex itself.

Applicant's argument(s) has been fully considered, but is not persuasive. The active agent of Claims 1 and 81 can be anything, including those agents that do not inactivate or eradicate the infectious agent. Only Claims 10 and 52, and claims dependent therefrom, require an agent capable of inactivating or eradicating the infectious agent. Thus, the approach of Hartmann continues to reasonably read upon the instantly claimed method(s).

Applicant argues that since the claims have been restricted to fucose, polyfucose or a derivative of polyfucose, Arigita (disclosing mannose as a targeting ligand) is no longer relevant.

Applicant's argument(s) has been fully considered, but is not persuasive. Arigita et al teach a method of preferentially delivering an active agent to a reservoir cell, specifically a myeloid dendritic cell, of a mammalian subject, the method comprising administering to the mammalian subject a lipid-active agent complex comprising at least one targeting ligand on the outer surface of the complex.

Applicant argues that the skilled person after having read Figdor could not have chosen fucose as a targeting ligand because the approach of Figdor is different from the approach of the present application. In Figdor, a compound that binds to a C-type lectin, for example mannose, fucose, plant lectins etc. on the surface of a dendritic cell is used for the modulation of the immune response in a mammal. This is achieved by modulating the interaction between a dendritic cell and a T-cell. By use of the compounds that bind to a C-type lectin, the association of a C-type lectin receptor on a surface of dendritic cells with the ICAM receptors on the surface of T-cells could be reduced.

Applicant's argument(s) has been fully considered, but is not persuasive. In response to applicant's argument that Figdor is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the instant specification discloses that the present invention relates to targeted liposomal delivery of active agents (pg 1, lines 10-11). Figdor is considered analogous prior art germane to the instantly claimed invention for disclosing targeting ligands to deliver an active agent to dendritic cells, whereby the compositions may be formulated in the form of a liposome (col. 9, lines 17-18). Furthermore, given that the reservoir cell [dendritic cell] embraces the instantly claimed reservoir cell, the lipid-active agent complex [liposome] is the same or substantially the same as the instantly claimed lipid-active complex, and the targeting ligand [fucose] is the same as the instantly claimed targeting ligand, it is axiomatic that the ability of the

instantly claimed dendritic cell will also experience impaired interaction with a T-cell upon binding the lipid-active agent complex, as per Figdor, as such naturally flows from the cell biology of receptor-ligand interactions and the metabolism of liposomes. Thus, it is unclear why Applicant believes the ordinary artisan would not have chosen fucose as a targeting ligand given that the Figdor abstract explicitly teaches the use of fucose as a targeting ligand for dendritic cells.

Applicant argues that Figdor does not show any experiments where their approach actually works. None of the examples (Figdor) show experiments studying the effect of mannose, fucose, plant lectins etc.

Applicant's argument(s) has been fully considered, but is not persuasive. The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. *In re Borkowski*, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970). Applicant has provided no evidence that the compounds (Figdor; Abstract) that bind to a C-type lectin on the surface of a dendritic cell, preferably fucose, are not enabled for use in methods of immunotherapy or inhibiting HIV infection.

10. **Claims 10 and 52 stand rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003) and Figdor et al, as applied to Claims 1-2, 6, 9, 15-16, 26-28, 37 and 81 above, and in view of LaGrone.

Response to Arguments

Applicant argues that it is highly questionable to use a combination of at least four documents in order to deny an inventive step.

Applicant's argument(s) has been fully considered, but is not persuasive. In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Applicant argues that LaGrone does not overcome the shortcomings of Hartmann, Arigita and Figdor.

Applicant's argument(s) has been fully considered, but is not persuasive. The Examiner's response to Applicant's argument(s) regarding Hartmann, Arigita and Figdor are discussed above and incorporated herein. Applicant does not contest the teachings of LaGrone et al as applied to the obviousness to substitute a first active agent as taught by Hartmann et al and/or Arigita et al with a second active agent, specifically a plant lectin as taught by LaGrone with a reasonable expectation of success because the simple substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

11. **Claims 58-59 stand rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003), Figdor et al and LaGrone, as applied to Claims 1-2, 6, 9-10, 15-16, 26-28, 37, 52 and 81 above, and in view of Haas et al.

Response to Arguments

Applicant argues that Haas neither discloses a particular lipid to a plant lectin ratio nor a particular size of the liposomes. The method of Haas is the modification of agents to be packaged having a low molecular weight in such a way that the membrane solubility or membrane permeability is improved. This approach is completely unrelated to the one claimed in the present application.

Applicant's argument(s) has been fully considered, but is not persuasive. Haas et al disclosed liposome compositions in which the therapeutic active agent is present in the liposome in an amount about 0.1mol% to about 50mol% to about 5mol% to about 10mol% based upon the liposomal components [0015]. The liposomes have a diameter of about 50 to 2000 nanometers, about 20 to 400nm, or about 50 to 300nm. [0062]. Where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). It is routine procedure to optimize component amounts to arrive at an optimal product that is superior for its intended use, since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See M.P.E.P. §2144.05. Thus, it is unclear how Applicant considers

Haas do not read upon a particular lipid to plant lectin ratio nor a particular size of liposome per the instant claims.

12. **Claims 50 and 53 stand rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003), Figdor et al, LaGrone and Haas et al, as applied to Claims 1-2, 6, 9-10, 15-16, 26-28, 37, 52, 58-59 and 81 above, and in view of Charan et al (2000).

Response to Arguments

Applicant continues to argue that multiple references are inappropriate.

Applicant's argument(s) has been fully considered, but is not persuasive. In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Applicant argues that Charan does not overcome the shortcomings of Hartmann, Arigita and Figdor.

Applicant's argument(s) has been fully considered, but is not persuasive. The Examiner's response to Applicant's argument(s) regarding Hartmann, Arigita and Figdor are discussed above and incorporated herein. Applicant does not contest the teachings of Charan et al as applied to the obviousness to substitute a first plant lectin as taught by LaGrone with a second plant lectin, specifically MHL, as taught by Charan et al with a reasonable expectation of success because the simple substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

13. **Claim 57 stands rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003), Figdor et al, LaGrone, Haas et al and Charan et al (2000), as applied to Claims 1-2, 6, 9-10, 15-16, 26-28, 37, 50, 52-53, 58-59 and 81 above, and in view of Matthiesen.

Response to Arguments

Applicant argues that Matthiesen does not overcome the shortcomings of Hartmann, Arigita and Figdor.

Applicant's argument(s) has been fully considered, but is not persuasive. The Examiner's response to Applicant's argument(s) regarding Hartmann, Arigita and Figdor are discussed above and incorporated herein. Applicant does not contest the teachings of Matthiesen as applied to the obviousness to substitute a monomeric lectin as taught by LaGrone with a dimeric or multimeric form of said lectin as taught by Matthiesen with a reasonable expectation of success because the simple substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

14. **Claim 56 stands rejected under 35 U.S.C. 103(a)** as being unpatentable over Hartmann et al in view of Arigita et al (2003), Figdor et al, LaGrone, Haas et al and Charan et al (2000) and Matthiesen, as applied to Claims 1-2, 6, 9-10, 15-16, 26-28, 37-39, 41-44, 50, 52-53, 57-59 and 81 above, and in view of Khwaja.

Response to Arguments

Applicant argues that Khwaja does not overcome the shortcomings of Hartmann, Arigita and Figdor.

Applicant's argument(s) has been fully considered, but is not persuasive. The Examiner's response to Applicant's argument(s) regarding Hartmann, Arigita and Figdor are discussed above and incorporated herein. Applicant does not contest the teachings of Khwaja as applied to the obviousness to try including Ca2+ and transition-metal ions in a lipid-plant lectin complex because "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipate success, it is likely that product not of innovation but of ordinary skill and common sense."An artisan would be motivated to try including Ca2+ and transition-metal ions in a lipid-plant lectin complex because those of ordinary skill in the art have long-recognized that some lectins are Ca2+-dependent sugar binding proteins, while others are non-Ca2+-dependent, and thus it is considered routine optimization to add Ca2+ and/or transition-metal ions to improve the ability of a lectin to bind to a desired target molecule.

Applicant argues that the present invention relates to the use of lectins not as freely soluble agents, but as (a) encapsulated and (b) targeted compounds. This approach allows for the inhibition and destruction of intact and infectious viruses and their subunits when being present

intracellularly in the particular cells – and exclusively in these cells - rather than to interfere with freely circulating viruses or their components.

Applicant's argument(s) has been fully considered, but is not persuasive. Applicant is respectively reminded that independent Claims 1 and 81 do not require plant lectins. Furthermore, those of ordinary skill in the art knew what targeting ligands effectively target a lipid-active agent complex, i.e. liposome, to dendritic cells (Hartmann, Arigita, Figdor), and LaGrone taught the use of plant lectins as an active agent. Thus, it is unclear what element of the instantly claimed methods are non-obvious over the cited prior art.

Conclusion

15. No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to KEVIN K. HILL whose telephone number is (571)272-8036. The Examiner can normally be reached on Monday through Friday, between 9:00am-6:00pm EST.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Joseph T. Woitach can be reached on 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin K. Hill/
Examiner, Art Unit 1633